

# David Walker

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## Positions

Associate Professor, Princeton University, July 2008-  
Visiting Researcher, Microsoft Research Redmond, September-December 2009.  
Visiting Researcher, Microsoft Research Cambridge, June-July 2010.  
Assistant Professor, Princeton University, February 2002-June 2008.  
Post-doctoral Researcher, Carnegie Mellon University, October 2000-October 2001.

## Education

Ph.D. Computer Science, Cornell University, Advisor: Greg Morrisett, 2001  
Masters of Science, Computer Science, Cornell University, 1999  
Bachelors of Science (Honors), Computer Science, Queen's University, 1995

## Research Interests

Programming languages, type systems, operational semantics, program logics, domain-specific languages for data processing, security and network programming.

## Awards

ACM SIGPLAN Research Highlight for the paper entitled "Fault-Tolerant Typed Assembly Language," published in PLDI 2007. Nominated September 2008.  
ACM SIGPLAN Research Highlight for the paper entitled "The Next 700 Data Description Languages," published in POPL 2006. Nominated September 2008.  
Most Influential 1998 POPL Paper Award for the paper entitled "From System F to Typed Assembly Language" presented at the 1998 ACM SIGPLAN-SIGACT Symposium on Principles of Programming languages. Awarded January 2008.  
ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI) Best Paper Award for the paper entitled "Fault-tolerant Typed Assembly Language," 2007  
Emerson Junior Faculty Award for Excellence in Research and Teaching, 2005  
Alfred P. Sloan Fellow, 2004  
NSF Career Award, 2003  
Cornell Computer Science Outstanding TA Award. May 1996.  
Prince of Wales Prize, Honorable Mention, 1995 (Awarded to the student with the 2nd highest standing in faculty of Arts and Science, Queens University)

R. W. Leonard Penultimate Year Scholarship, 1994 (Awarded to the student with the highest standing through 3 years of Bachelors of Science, Queens University)

### **General Academic Service**

Microsoft Think Tank on University Relations. 2009.

Core member, CCC Visioning Study on Multi-level Approaches to Reliability. November 2008-2010.

Associate Editor for ACM Transactions on Programming Languages and Systems. June 2007-.  
NSF-sponsored Summer School on Language-Based Techniques for Integrating with the External World. Steering Committee. July 2007.

NSF-sponsored Summer School on Language-Based Techniques for Concurrent and Distributed Software. Steering Committee. July 2006.

The Computer Science Futures Project, a DARPA-sponsored panel on the Future of Computer Science Research. Panelist, 2006.

NSF-sponsored Summer School on Reliable Computing. Organizing committee (co-chair). Eugene, OR, July 2005.

NSF-sponsored Summer School on Security: Theory to Practice. Organizing committee (co-chair). Eugene, OR, June 2004.

ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages. Publicity Chair. 2003-2006.

Panelist for a number of NSF funding programs.

### **Program Committees**

20th European Symposium on Programming. Program Committee, 2011.

ACM SIGPLAN Conference on Programming Language Design and Implementation. Program Committee, 2010.

21st Symposium on Implementation and Application of Functional Languages. Program Committee, 2009.

ACM SIGPLAN Conference on Object-Oriented Systems, Languages, Programming and Applications (OOPSLA). Program Committee, 2009.

ACM SIGPLAN Workshop on Programming Languages and Analysis for Security. Program Committee, 2007.

Trends in Functional Programming. Program Committee, 2007.

ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages. Program Committee, 2007.

ACM SIGPLAN International Symposium on Code Generation and Optimization. Program Committee, 2007.

Workshop on Foundations of Object-Oriented Languages. Program Committee, 2007.

ACM/NSF Summer School on Language-Based Techniques for Concurrent and Distributed Software. Steering Committee. July 2006.

33rd International Colloquium on Automata, Languages and Programming. Program Committee, 2006.

Workshop on Foundations of Aspect-Oriented Languages, Program Committee, 2006

Workshop on Semantics, Program Analysis and Computing Environments for Memory Management. Program Co-chair, 2006.

Workshop on Foundations of Aspect-Oriented Languages. Program Chair, 2005.

Workshop on Logics for Resources, Processes and Programs, Program Committee. 2004.

ACM SIGPLAN International Conference on Functional Programming. Program Committee, 2004.

ACM SIGPLAN International Workshop on Types in Language Design and implementation. Program Committee, 2004.

Workshop on Foundations of Aspect-Oriented Languages, Program Committee. March 2004.

New Jersey Programming Languages Seminar, Host. September 2003.

New Jersey Programming Languages Seminar, Program Chair. December, 2002.

Workshop on Partial Evaluation and Semantics-based Program Manipulation, Program committee, January 2002.

### **Princeton Service**

Computer Science Department Representative for Undergraduate Affairs, 2010-.

Princeton SEAS Curriculum Committee, 2010-.

Committee on Undergraduate Admission and Financial Aid 2007-2009.

Computer Science Independent Work Co-ordinator, 2007-2009.

Computer Science BSE '09 academic advisor.

Freshman advisor 2004-2006, 2009.

### **Graduated Ph.D. Students**

Frances Perry. Graduated August 2008.

Thesis title: Reasoning about Software in the Presence of Transient Faults.

First position: Researcher, Google.

Limin Jia. Graduated November 2007.

Thesis title: Linear Logic and Imperative Programming.

First position: Post-doctoral researcher, University of Pennsylvania.

Daniel S. Dantas. Graduated August 2007.

Thesis title: Analyzing Security Advice in Functional Aspect-Oriented Programming Languages.

First Position: Consultant.

Yitzhak Mandelbaum. Graduated August 2006.  
Thesis title: The Theory and Practice of Data Description.  
First position: Researcher, AT&T Labs Research.

Jay Ligatti. Graduated May 2006.  
Thesis title: Policy Enforcement via Program Monitoring.  
First position: Assistant Professor, University of South Florida.

#### **Current Ph.D. Students**

C.J. Bell. Supervised since October 2007.  
Chris Monsanto. Supervised since September 2010.  
Cole Schlesinger. Supervised since May 2010.  
Qian Xi. Supervised since June 2007.

#### **Post-doctoral Students**

Nate Foster. September 2009-July 2010.  
First position: Assistant professor at Cornell University  
Kenny Q. Zhu. January 2006-August 2009.  
First Position: Assistant Professor, Shanghai University.

#### **Ph.D. Dissertation Committees**

Karl Mazurak, Ph.D. University of Pennsylvania, (anticipated) 2011  
Junwen Lai, Ph.D, 2008.  
Geoffrey Washburn, Ph.D. University of Pennsylvania, 2007  
Zhaozhong Ni, Ph.D. Yale University, 2006  
Spyridon Triantafyllis. Ph.D., 2006  
Dinghao Wu. Ph.D., 2005  
Gang Tan. Ph.D., 2005  
Xinming Ou. Ph.D., 2005  
Eun-Young Lee, Ph.D., 2004  
Juan Chen, Ph.D., 2004  
Amal Ahmed. Ph.D., 2004  
Yitzhak, Gottlieb. Ph.D., 2004  
Kedar N. Swadi, Ph.D., 2003  
Lujo Bauer, Ph.D., 2003

## **Undergraduate Research Advising**

Patrick Wendell, Senior Independent Work, Fall 2010  
Alex Ogier, Junior Independent Work, Fall 2010  
Adam Sanders, Senior Thesis, Fall 2008-Spring 2009  
Michael Dirolf, Senior Independent Work, Fall 2007  
Aaron Potechin, Summer Research, 2007  
David Costanzo, Summer Research, 2007; Senior Independent Work, Fall 2007  
Zach Devito, Junior Independent Work, Fall 2006  
Ben DeLoache, Senior Independent Work, Fall 2006  
Lester Mackey, Junior Independent Work, Spring 2006; Summer Research 2006  
Jin Oh, Senior Independent Work, Spring 2006  
Mark Daly, Senior Thesis, Fall 2005-Spring 2006  
Michael Ten-Pow, Junior Independent Work. Fall 2005  
Rob Simmons, Senior Thesis, Fall 2004-Spring 2005  
Jonathon Heinberg, Junior Independent Work, Fall 2002-Spring 2003  
Bismark Paliz, Senior Independent Work, Fall 2002

## **Awards Won by my Students**

CRA Outstanding Undergraduate Student, won by Lester Mackey, 2007 (Awarded to one male and one female student from any North American university for demonstrated excellence in computer research. Awarded to Lester Mackey in part for his junior independent research and summer research with me.)

Moses Taylor Pyne Honor Prize, won by Lester Mackey, 2007 (The highest general distinction conferred on an undergraduate at Princeton. Awarded to Lester Mackey in part for his junior independent research and summer research with me.)

Princeton Computer Science Department Senior Thesis Award, co-winner Mark Daly, my undergraduate advisee, 2006.

Princeton Computer Science Department Senior Thesis Award, co-winner Rob Simmons, my undergraduate advisee, 2005.

## **Teaching**

COS 598: Parallelism (Fall 2010)  
COS JIW/397/SRT/497: Undergraduate Independent Research Program (Fall 07-Spring 09)  
COS 226: Introduction to Algorithms and Data Structures (Co-taught with Robert Sedgewick, Spring 07)  
COS 320: Compiling Techniques (Spring 03, Spring 04, Spring 05, Spring 06)  
COS 441: Programming Languages (Undergraduate) (Fall 05, Fall 07, Fall 08)  
COS 510: Programming Languages (Graduate) (Fall 02, Fall 03)

COS 597: Computer Security Foundations (Fall 04)

COS 598: Foundations of Language-Based Security (Spring 02)

TACL Seminar: Princeton's research seminar on programming languages and compiler technology (Periodically)

## Publications

### 2011

1. The PADS project: An Overview. Kathleen Fisher and David Walker. Invited paper. IEEE International Conference on Data Engineering. April 2011.
2. Linear Maps. Shuvendu Lahiri, Shaz Qadeer and David Walker. ACM SIGPLAN Workshop on Programming Languages meets Program Verification. January 2011.

### 2010

3. Frenetic: A High-Level Language for OpenFlow Networks. Nate Foster, Rob Harrison, Matthew L. Meola, Michael J. Freedman, Jennifer Rexford and David Walker. Workshop on Programmable Routers for Extensible Services of Tomorrow. November 2010.
4. Concurrent Separation Logic for Pipelined Parallelization. Christian J. Bell, Andrew Appel and David Walker. The 17th Annual Static Analysis Symposium. September 2010.
5. A Context-free Markup Language for Semi-structured Text. Qian Xi and David Walker. ACM SIGPLAN Conference on Programming Language Design and Implementation. June 2010.
6. Faulty Logic: Reasoning about Fault Tolerant Programs. Matthew L. Meola and David Walker. European Symposium on Programming. March, 2010.
7. Semantics and Algorithms for Data-dependent Grammars. Trevor Jim, Yitzhak Mandelbaum and David Walker. ACM SIGPLAN-SIGACT Symposium on Principles of Programming languages. January, 2010.

### 2009

8. An Overview of the Oregon Programming Languages Summer School. Jim Allen, Zena Ariola, Pierre-Louis Curien, Matthew Fluet, Jeff Foster, Dan Grossman, Robert Harper, Hugo Herbelin, Yannis Smaragdakis, David Walker and Steve Zdancewic. SIGPLAN Notices, Vol. 44, No. 11. November 2009.
9. Incremental Learning of System Log Formats. Kathleen Fisher, David Walker and Kenny Q. Zhu. Workshop on the Analysis of System Logs. October 2009.
10. Language Support for Processing Distributed Ad Hoc Data. Kenny Q. Zhu, Daniel S. Dantas, Kathleen Fisher, Limin Jia, Yitzhak Mandelbaum, Vivek Pai and David Walker. ACM SIGPLAN International Conference on Principles and Practice of Declarative Programming. September 2009.
11. Composing Expressive Run-time Security Policies. Lujo Bauer, Jay Ligatti, and David Walker. ACM Transactions on Software Engineering and Methodology, Volume 18, Issue 3, pp 9:1-9:43, May 2009.

12. The Next 700 Data Description Languages. Kathleen Fisher, Yitzhak Mandelbaum, and David Walker. Accepted to the Journal of the ACM. March 2009.
13. Run-time Enforcement of Nonsafety Policies. Jay Ligatti, Lujo Bauer, and David Walker. ACM Transactions on Information and System Security, Volume 12, Issue 3, pp 1-41, January 2009.
14. Ad Hoc Data and the Token Ambiguity Problem. Qian Xi, Kathleen Fisher, Kenny Q. Zhu, and David Walker. ACM Symposium on Practical Applications of Declarative Languages, January 2009.

## 2008

15. Reasoning about Control Flow in the Presence of Transient Faults. Frances Perry and David Walker. 15th International Static Analysis Symposium, July 2008.
16. Reasoning About Faulty Programs. Matthew Meola, Frances Perry and David Walker. Second International Workshop on Proof-Carrying Code. June 2008.
17. Comparing Semantic and Syntactic Methods in Mechanized Proof Frameworks Christian Bell, Robert Dockins, Aquinas Hobor, Andrew W. Appel and David Walker. Second International Workshop on Proof-Carrying Code. June 2008.
18. LearnPADS: Fully Automatic Tool Generation From Ad Hoc Data. Kathleen Fisher, David Walker and Kenny Q. Zhu. ACM SIGMOD Demo Session. June 2008.
19. AspectML: A Polymorphic Aspect-oriented Functional Programming Language. Daniel S. Dantas, David Walker, Geoffrey Washburn, Stephanie Weirich. ACM Transactions on Programming Languages and Systems, Volume 30, Issue 3, pp 14:1-14:60, May 2008.
20. From Dirt to Shovels: Fully Automatic Tool Generation From Ad Hoc Data. Kathleen Fisher, David Walker, Kenny Q. Zhu and Peter White. ACM SIGPLAN-SIGACT Symposium on Principles of Programming languages. January 2008.

## 2007

21. Composing Expressive Run-time Security Policies. Lujo Bauer, Jay Ligatti, and David Walker. Accepted for publication in ACM Transactions on Software Engineering and Methodology, November 2007.
22. Towards 1-click Tool Generation with PADS. David Burke, Kathleen Fisher, David Walker, Peter White and Kenny Q. Zhu. In the ICML-2007 Workshop on Challenges and Applications of Grammar Induction. June 2007.
23. Fault-tolerant Typed Assembly Language. Frances Perry, Lester Mackey, George A. Reis, Jay Ligatti, David I. August, and David Walker. ACM SIGPLAN Conference on Programming Language Design and Implementation. June 2007. Winner of the PLDI 07 Best Paper Award.
24. A Dual Semantics for the Data Description Calculus (Extended Abstract). Yitzhak Mandelbaum, Kathleen Fisher and David Walker. In the Eighth Symposium on Trends in Functional Programming, April 2007.
25. PADS/ML: A Functional Data Description Language. Yitzhak Mandelbaum, Kathleen Fisher, David Walker, Mary Fernandez, and Artem Gleyzer. ACM SIGPLAN-SIGACT Symposium on Principles of Programming languages. January 2007.

## 2006

26. A Type-Theoretic Interpretation of Pointcuts and Advice. Jay Ligatti, David Walker and Steve Zdancewic. *Science of Computer Programming*. Volume 63, Issue 3, pp 240-266. December 2006.
27. Expressing Heap-shape Contracts in Linear Logic. Frances Spalding, Limin Jia and David Walker. *ACM SIGPLAN-SIGSOFT International Conference on Generative Programming and Component Engineering*. October 2006.
28. Static Typing for a Faulty Lambda Calculus. David Walker, Lester Mackey, Jay Ligatti, George Reis, and David August. *ACM SIGPLAN International Conference on Functional Programming*. September 2006.
29. Mechanized Metatheory for User-Defined Type Extensions. Daniel Marino, Brian Chin, Todd Millstein, Gang Tan, Robert J. Simmons and David Walker. *ACM SIGPLAN Workshop on Mechanizing Metatheory*. September 2006.
30. PADS: An End-to-end System for Processing Ad Hoc Data. Mark Daly, Mary Fernandez, Kathleen Fisher, Robert Gruber, Yitzhak Mandelbaum, David Walker and Xuan Zheng. *ACM SIGMOD demo*. June 2006.
31. ILC: A Foundation for Automated Reasoning about Pointer Programs. Limin Jia and David Walker. *European Symposium on Programming Languages*. In *Programming Languages and Systems*, LNCS 3924, pp 131-145, Peter Sestoft editor. March 2006.
32. Making Extensibility of System Software Practical with the C4 Toolkit. Marco Yuen, Marc E. Fiuczynski, Robert Grimm, Yvonne Coady and David Walker. *Workshop on Software Engineering Properties of Languages and Aspect Technologies*. March 2006.
33. The Next 700 Data Description Languages. Kathleen Fisher, Yitzhak Mandelbaum and David Walker. *ACM SIGPLAN-SIGACT Symposium on Principles of Programming languages*. January 2006.
34. Harmless Advice. Daniel S. Dantas and David Walker. *ACM SIGPLAN-SIGACT Symposium on Principles of Programming languages*. January 2006.
35. LaunchPADS: A System for Processing Ad Hoc Data. Mark Daly, Mary Fernandez, Kathleen Fisher, Yitzhak Mandelbaum and David Walker. *Demo Paper in PLAN-X 06: Programming Language Technologies for XML*. January 2006.

## 2005

36. PolyAML: A Polymorphic Aspect-oriented Functional Programming Language. Daniel S. Dantas, David Walker, Geoffrey Washburn and Stephanie Weirich. *ACM SIGPLAN International Conference on Functional Programming*. September 2005.
37. Enforcing Non-safety Security Policies with Program Monitors. Jay Ligatti, Lujo Bauer and David Walker. *Tenth European Symposium on Research in Computer Security*. September 2005.
38. Patch(1) Considered Harmful. Marc E. Fiuczynski, Robert Grimm, Yvonne Coady and David Walker. *Workshop on Hot Topics in Operating Systems*. June, 2005.



39. Certifying Compilation for a Language with Stack Allocation. Limin Jia, Frances Spalding, David Walker and Neal Glew. IEEE Symposium on Logic in Computer Science. June 2005.
40. A Refined Proof Theory for Reasoning About Separation. Limin Jia and David Walker. IEEE Symposium on Logic in Computer Science, short paper. June 2005.
41. Composing Security Policies in Polymer. Lujo Bauer, Jay Ligatti and David Walker. ACM SIGPLAN Conference on Programming Language Design and Implementation. June 2005.
42. Edit Automata: Enforcement Mechanisms for Run-time Security Policies. Jay Ligatti, Lujo Bauer and David Walker. International Journal of Information Security, Volume 4, Number 2, pp. 2-16, February 2005. ISSN: 1615-5262, Springer-Verlag.
43. Substructural Type Systems. Chapter 1 of Advanced Topics in Types and Programming Languages, Benjamin Pierce, ed., January 2005.
44. Harmless Advice. Daniel S. Dantas and David Walker. In Foundations of Object-Oriented Languages, January 2005.

#### 2004

45. Dynamic Typing with Dependent Types (extended abstract). Xinming Ou, Gang Tan, Yitzhak Mandelbaum, and David Walker. In the 3rd IFIP International Conference on Theoretical Computer Science, August, 2004.
46. Specifying Properties of Concurrent Computations in CLF. Kevin Watkins, Iliano Cervesato, Frank Pfenning and David Walker. Workshop on Logical Frameworks and Meta-Logics. Cork, Ireland, July 2004.
47. Modal Proofs As Distributed Programs (extended abstract). Limin Jia and David Walker. In the European Symposium on Programming, LNCS 2986, David Schmidt (Ed.), pp. 219–233, Springer, April, 2004.
48. A Concurrent Logical Framework: The Propositional Fragment. Kevin Watkins, Iliano Cervesato, Frank Pfenning and David Walker. In S. Berari, M. Coppo, and F. Damiani, Ed, Types for Proofs and Programs, Lecture Notes in Computer Science 3085, Springer-Verlag, pages 355–377, 2004. Revised selected papers and from the Third International Workshop along the Types for Proofs and Program, Torino, Italy, April 2003.

#### 2003

49. A Theory of Aspects. David Walker, Steve Zdancewic and Jay Ligatti. In the ACM SIGPLAN International Conference on Functional Programming, August 2003.
50. An Effective Theory of Type Refinements. Yitzhak Mandelbaum, David Walker and Robert Harper. In the ACM SIGPLAN International Conference on Functional Programming, August 2003.
51. Reasoning about Hierarchical Storage. Amal Ahmed, Limin Jia and David Walker. IEEE Symposium on Logic in Computer Science, pp. 33–44. Ottawa, Canada, June 2003.
52. Resource Usage Analysis Via Scoped Methods. Gang Tan, Xinming Ou and David Wnoalker. Foundations of Object-Oriented Languages. January, 2003.

53. The Logical Approach to Stack Typing. Amal Ahmed and David Walker. ACM workshop on Types in Language Design and Implementation. January, 2003.

#### 2002

54. Types and Effects for Non-interfering Program Monitors. Lujo Bauer, Jarred Ligatti and David Walker. International Symposium on Software Security. Tokyo, November, 2002. Revised for printing in Software Security – Theory and Systems, LNCS 2609, Springer, pp 154–171. December 2002.
55. More Enforceable Security Policies. Lujo Bauer, Jarred Ligatti and David Walker. Workshop on Computer Security Foundations. Copenhagen, July 2002.
56. Stack-based Typed Assembly Language. Greg Morrisett, Karl Crary, Neal Glew, and David Walker. Journal on Functional Programming, 12(1):43-88, January 2002.

#### 2001

57. On Linear Types and Regions. David Walker and Kevin Watkins. In ACM SIGPLAN International Conference on Functional Programming, September 2001.
58. On Linear Types and Regions. David Walker and Kevin Watkins. In the Workshop on Semantics, Program Analysis and Computing Environments for Memory Management. London, UK, January 2001.
59. Alias Types for Recursive Data Structures. David Walker and Greg Morrisett. Workshop on Types in Compilation. Montreal, Canada. Selected and revised papers printed in LNCS 2071 (Harper, ed.) March 2001.

#### 2000

60. Typed Memory Management via Static Capabilities. David Walker, Karl Crary, and Greg Morrisett. ACM Transactions on Programming Languages and Systems, 22(4):701-771, July 2000.
61. Alias Types. Frederick Smith, David Walker, and Greg Morrisett. European Symposium on Programming. Published in Lecture Notes in Computer Science, Gert Smolka, editor, volume 1782, 366-381, Berlin, Germany, March 2000.
62. A Type System for Expressive Security Policies. David Walker. Twenty-Seventh ACM SIGPLAN Symposium on Principles of Programming Languages . pages 254-267, Boston, January 2000.

#### 1999

63. A Type System for Expressive Security Policies. David Walker. In the FLOC '99 Workshop on Run-time Result Verification. Trento, Italy, July 1999.
64. From System F to Typed Assembly Language. Greg Morrisett, David Walker, Karl Crary, and Neal Glew. ACM Transactions on Programming Languages and Systems, 21(3):527-568, May 1999.
65. TALx86: A Realistic Typed Assembly Language. Greg Morrisett, Karl Crary, Neal Glew, Dan Grossman, Richard Samuels, Frederick Smith, Dave Walker, Stephanie Weirich, and Steve

Zdancewic. In the ACM SIGPLAN Workshop on Compiler Support for System Software. pages 25-35, Atlanta, May 1999.

66. Typed Memory Management in a Calculus of Capabilities. Karl Crary, David Walker, and Greg Morrisett. Twenty-Sixth ACM SIGPLAN Symposium on Principles of Programming Languages. pages 262-275, San Antonio, January 1999.

## 1998

67. Stack-Based Typed Assembly Language. Greg Morrisett, Karl Crary, Neal Glew, and David Walker. 1998 Workshop on Types in Compilation (TIC '98). Kyoto, Japan. Published in Xavier Leroy and Atsushi Ohori, editors, Lecture Notes in Computer Science, volume 1473, pages 28-52. Springer, 1998.
68. From System F to Typed Assembly Language. Greg Morrisett, David Walker, Karl Crary, and Neal Glew. Twenty-Fifth ACM SIGPLAN Symposium on Principles of Programming Languages. pages 85-97, San Diego, January 1998.

## Invited Talks and Lectures

Ad Hoc Data: From Uggh to Smug. David Walker. International Workshop on Relations and Data Integrity Constraints and Languages. May 2010.

Ad Hoc Data: Problems and Solutions. Google Seattle, December 2008.

Ad Hoc Data: Problems and Solutions. Microsoft Research, December 2008.

From Dirt to Shovels: Fully Automatic Tool Generation From Ad Hoc Data. AT&T UC Symposium, August 2007.

Summer School on Language-Based Techniques for Integrating with the External World. Invited lecturer. July 2007.

On Cosmic Rays, Bat Droppings and What We Can Do About Them. Yale University Computer Science Department Colloquium. November 2006.

On Cosmic Rays, Bat Droppings and What We Can Do About Them. IFIP Working Group 2.8. July 2006.

PADS/ML: A Functional Data Description Language. Carnegie Mellon POP Seminar. May 2006.

Logics for Checking Properties of Pointer Programs. Workshop on Intuitionistic Modal Logics and Applications. June 2005.

Stacks, Heaps and Regions: One Logic to Bind Them. Workshop on Semantics, Program Analysis, and Computing Environments for Memory Management. January, 2004.

Summer School on Foundations of Security. Invited lecturer. University of Oregon, June, 2003.

ACM State-of-the-art Summer School on Foundations of Internet Security. Invited lecturer. Poland, June 2002.

Poly stop a hacker. New Jersey Programming Languages Seminar. September, 2002.

Symposium on Cyber Security and Trustworthy Software. March, 2002.

## Funding

SHF:Small:Language Support for Ad Hoc Data Processing (PI). National Science Foundation CCF-1016937. \$500,000. August 2010-June 2012.

SI2-SSI: Accelerating the Pace of Research through Implicitly Parallel Programming (Co-PI). National Science Foundation OCI-1047879. \$1,740,214 Oct 2010-Sep 2014.

Networks Opposing Botnets (NoBot) (Co-PI). National Science Foundation 5520404 (Prime ONR) \$400,000. April 2009-April 2012.

Real-Time Network Forensic Analysis. DARPA subcontract under prime contract number FA8750-07-C-0014 (PI). \$79,329. January-June 2007.

Well-typed, Trustworthy Computing in the Presence of Transient Faults. NSF award CNS-0627650 (PI). \$1,100,000. August 2006 - August 2010.

Language Support for Data-centric Systems Monitoring. NSF award CNS 0615062 (PI). \$798,975. July 2006 - July 2009.

Automatic Tool Generation for Ad Hoc Scientific Data. NSF award IIS 0612147 (PI). \$493,124. July 2006 - July 2009.

Collaborative Research: CSR-PDOS: Managing OS Extensibility via Aspect-oriented Programming Technology. NSF award CSR 0615213 (Co-PI). \$315,319. July 2006 - July 2009.

Emerson Junior Faculty Award for Excellence in Research and Teaching. \$30,000. May 2005. Alfred P. Sloan Fellow. \$40,000. Sept 2004-Sept 2006.

Assurance-Carrying Components. ARDA grant for BAA 03-03-FH, Co-PI. \$759,910. Oct 2003-March 2005.

CAREER: Programming Languages for Secure and Reliable Component Software Systems. NSF Career Grant, CCR-0238328, PI. \$437,700. July 2003-June 2008.

Collaborative Research: High-Assurance Common Language Runtime. NSF CCR-0208601, Co-PI. \$1,114,468.00. July 2002-June 2007.

A Gift from Microsoft Research. \$25,000. February 2002.

Scaling Proof-Carrying Code to Production Compilers and Security Policies. DARPA contract F30602-99-1-0519, Co-PI. December 2002-December 2003.

Efficient Logics For Network Security. ONR. Senior personnel (Carnegie Mellon University). February 2001-January 2002.